RISER EXTENSIONS

2-11. Cargo parachutes are used singularly or in a cluster. When parachutes are used in a cluster, the risers of each parachute are lengthened so the canopies remain almost vertical as they descend to increase the effectiveness of each canopy. The length of a riser extension and the number of stows used in stowing the extensions are given in Table 2-6.

Table 2-6. Riser Requirements for G-11B, G-11C, and G-12E Cargo Parachute Clusters

Number of Parachutes in Cluster	Length of Riser Extension (feet)	Number of Extension Stows	Type XXVI Nylon Webbing Slings
2	20	2	20-foot (2-loop)
3 or 4	60	8	60-foot (3-loop)
5 to 8	120	16	120-foot (2-loop)

Notes:

1. All riser extensions must be continuous type XXVI nylon slings and have identical riser extensions and each must be of the same length.

2. For proper stowing procedures for G-11B, G-11C, and G-12E, see Chapter 3 .

3. G-12E has three stows.

Section VI

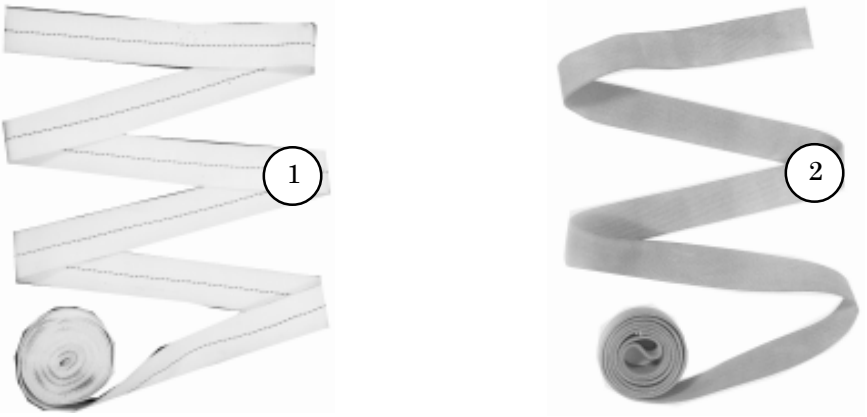
Parachute Restraint System

USE

2-12. A parachute restraint system, consisting of one to three restraint straps and one or more parachute release straps, is used on all airdrop platform loads rigged with two or more cargo parachutes. Installation procedures are the same for the G-11B and G-11C, or G-12E cargo parachutes.

DESCRIPTION

2-13. When the force is transferred from the extraction parachute to the deployment line, it pulls on the clevis to which the release strap is secured. This pulls the knife on the release strap to cut the restraint strap and allows the cargo parachutes to deploy. Parachute restraint straps are made from lengths of one of the types of webbing shown in Figure 2-7.



Note: One parachute is restrained with type III nylon cord.

1. Restraint straps made from lengths of type VIII nylon webbing are used to restrain two to five cargo parachutes. The ends of these straps are tied to the load or platform.

2. Restraint straps made from lengths of type X nylon webbing are used to restrain six to eight cargo parachutes. Each end of these straps is hooked to a tiedown clevis with a D-ring and a load binder.

Note: The number and type of parachute restraint straps to be used on a particular load may be found in the specific rigging manual.

Figure 2-7. Webbing Used for Parachute Restraint Straps

Section VII

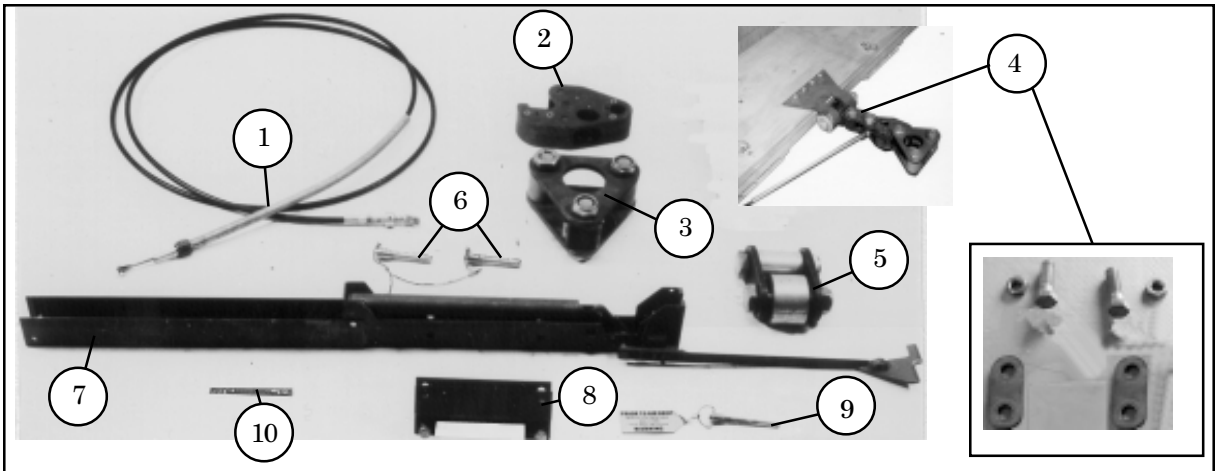
Extraction System

USE

2-14. The extraction system is made up of the extraction parachute, the extraction lines and the Extraction Force Transfer Coupling (EFTC). The system is bolted to the airdrop platform and is used to pull the load from the aircraft. For airdrop, the load exits through the cargo ramp and door of the aircraft. The extraction force is then transferred to the deployment line of the cargo parachute.

COMPONENTS

2-15. The components of the EFTC used on low-velocity airdrop loads are shown in Figure 2-8.



1. Cable assembly (12-, 16-, 20-, 24-, or 28-foot)
2. Latch assembly
3. Coupling link assembly
4. Latch connector assembly
5. Adapter link assembly
6. Quick-release pins (pip pins)
7. Actuator assembly
8. Actuator mounting bracket
9. Locking pin
10. Actuator arm extension pin (C-5 aircraft only)

Figure 2-8. Components of EFTC

OPERATION

2-16. The EFTC is used for low-velocity airdrop and how it operates is described below.

a. After the extraction parachute has deployed, it pulls on the coupling link assembly or the adapter link assembly (Items 3 and 5, Figure 2-8) and pulls the load from the aircraft.

b. The arm of the actuator assembly (Item 7, Figure 2-8) rides on top of the rail. In the C-5 aircraft the actuator arm extension pin rides on top of the left rail in the aircraft. When the actuator has been pulled clear of the rails, the arm of the actuator rotates downward and pulls on the cable (Item 1, Figure 2-8) hooked to the catch inside the latch assembly (Item 2, Figure 2-8). This causes the catch to release the coupling link assembly.

c. The extraction parachute then pulls on the deployment line which, in turn, breaks or cuts the parachute restraint. The extraction force then deploys the recovery parachute(s).

Section VIII

Release Assemblies

USE

2-17. The cargo parachute release assembly separates the parachute (s) from the load when the load touches the ground. The separation reduces the chance of the wind dragging or overturning the load.

DESCRIPTION

2-18. The M-1 or the M-2 is used when a platform load is rigged for low-velocity airdrop. The automatic cargo release is used on some Navy and Air Force loads.

a. The M-1 Airdrop Cargo Parachute Release. This release is used with rigged loads weighing up to 15,000 pounds suspended.

b. The M-2 Airdrop Cargo Parachute Release. The M-2 release is similar to the M-1 release. The M-2 release is used on loads weighing up to 42,000 pounds suspended.

c. The Automatic Cargo Release (Not for Army Use). The automatic cargo release is a two-piece unit that operates on a load-tension activated hydraulic arming delay principal. It has no internal maintenance or repair. The automatic cargo release is used on loads weighing up to 2,500 pounds suspended. The complete description of the automatic cargo release is in Chapter 3, Section VI.

Note: Specific rigging manuals will specify which release is used.

INSPECTION AND MAINTENANCE

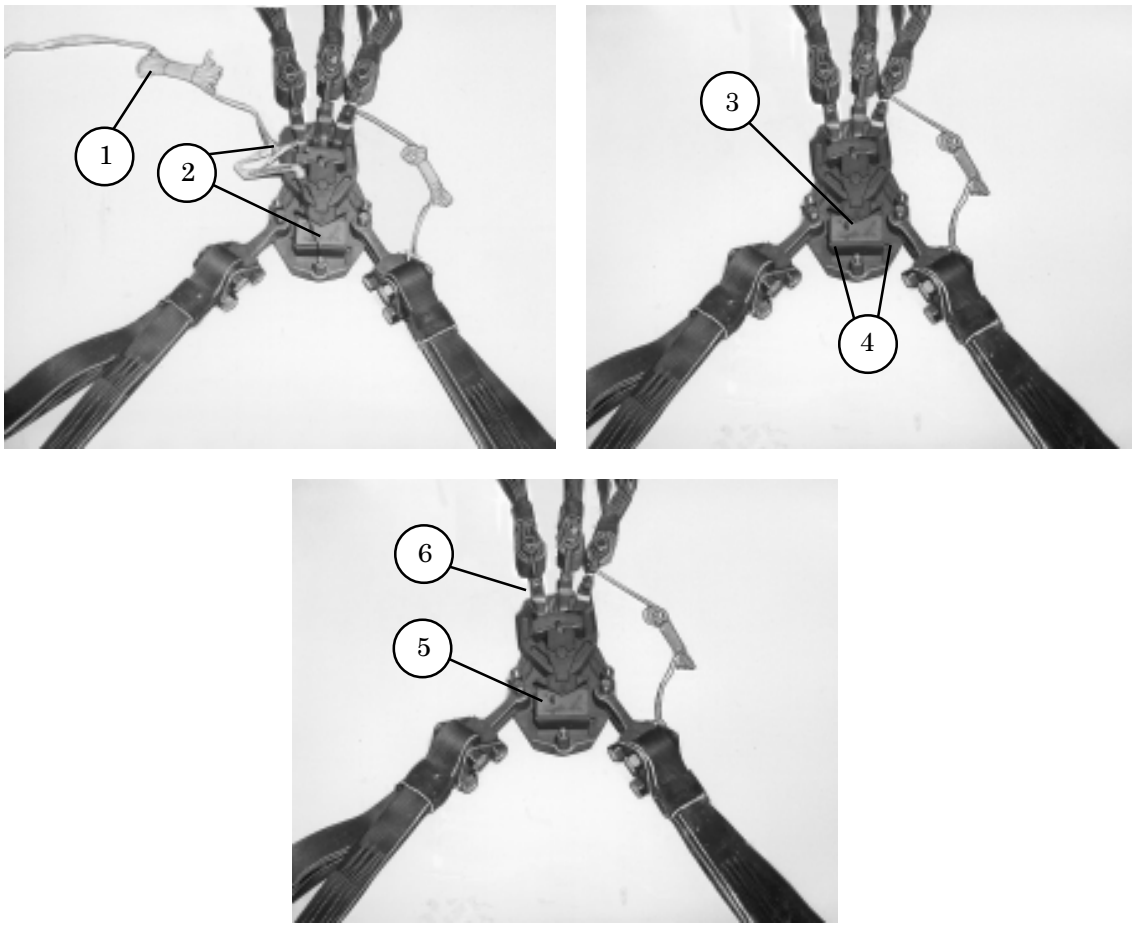
2-19. The M-1 and M-2 releases are inspected and maintained as outlined in TM 10-1670-296-20&P/TO 13C7-49-2. See the TM for specifics on inspection and maintenance.

OPERATION

2-20. The operation of the airdrop cargo parachute release is given below.

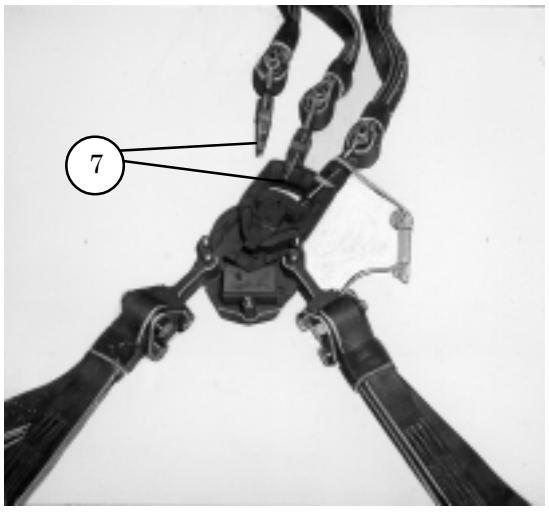
The Airdrop Cargo Parachute Release. The release works when the load touches the ground and upper suspension link tilts or moves to the side. When the release tilts, the parachutes are released from the load. Figure 2-9 shows how the release operates.

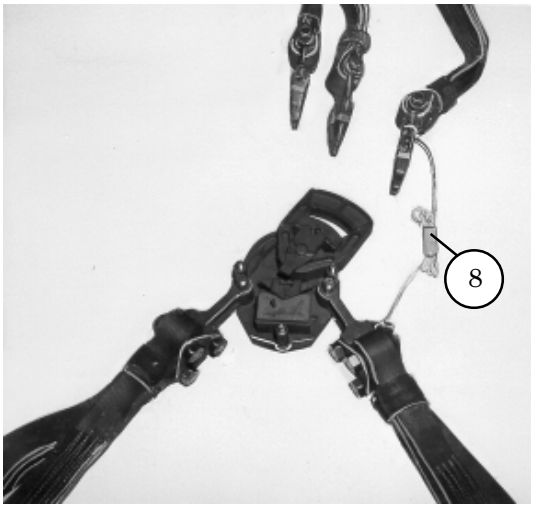
Note: The face plate has been removed to aid in identification.



1. As the cargo parachute deploys, the arming wire lanyard is pulled.
2. The safety tie is broken and the arming wire is pulled from the timer.
3. The timer delays from 12 to 16 seconds. This delay allows the load to stabilize itself under the parachute.
4. When the timer winds down, it retracts its keys from the slots in the release.
5. When the keys are retracted from their slots, the timer is free to fall within the release.
6. As the timer falls, it frees the toggle and upper suspension link.

Figure 2-9. Typical Operation of the M1 and M2 Cargo Parachute Release





7 When the load descends, the normal upright position of the M-1 release keeps the parachute connectors in place. As the load touches the ground, the upper suspension link tilts and allows the parachute connectors to pull free.

8 The released parachute stretches the dragline until the release drags to one side of the load. Then the dragline breaks.

Figure 2-9. Typical Operation of the M1 and M2 Cargo Parachute Release (Continued)

Section IX

Extraction Parachutes And Extraction Line

CARGO EXTRACTION PARACHUTES

2-21. A cargo extraction parachute is placed on every airdrop platform load to pull the load out of the aircraft. The extraction system is rigged up by Air Force personnel after the load is in the aircraft.

a. The 15-Foot Parachute. This extraction parachute has a 15-foot-diameter, flat circular ring-slot nylon canopy. It is also used as a drogue parachute.

b. The 22-Foot Parachute. This extraction parachute has a 22-foot-diameter, flat circular ring-slot nylon canopy.

c. The 28-Foot Parachute. This extraction parachute has a 28-foot-diameter, flat circular, ring-slot nylon canopy.

INSPECTION, MAINTENANCE, AND PACKING

2-22. Cargo extraction parachutes are inspected, maintained, and packed as outlined in TM 10-1670/TO 13C5 series manuals. See the specific TM for more information on inspecting, maintaining, and packing these parachutes. The 22-foot extraction deployment bag modification procedures are located in TM 10-1670-286-20.

REQUIREMENTS

2-23. Every rigging manual states the number and type of cargo extraction parachutes and the extraction line to be used on a particular load. However, when changes are made to an accompanying load or variations in rigging are made, the extraction parachute requirement must be determined.

a. Low Velocity Airdrop. Use Table 2-7 as a guide for determining the cargo extraction parachute. Use Table 2-8 as a guide for determining extraction line requirements for the C-130, C-141, and C-17 aircraft. Use Table 2-9 for determining extraction line requirements for the C-5 aircraft. Table 2-10 shows the MC-130 aircraft extraction drogue parachute and extraction drogue line requirements.

Table 2-7. Extraction Parachute Requirements for C-130, C-141, C-17, and C-5 Aircraft

Extraction Load Range	Cargo Extraction Parachute
2,520-8,000	15-Foot
7,000-17,500	22-Foot
16,000-30,000	28-Foot
28,000-42,000	Two 28-Foot

Notes:

1. **The maximum load that may be extracted over the ramp of a C-130 aircraft during airdrop is 25,000 pounds for aircraft with a serial number (tail number) of 62-1783 or lower and 42,000 pounds for aircraft with a tail number of 61-2358, 62-1784 and higher.**

2. **The maximum load extracted over the ramp of a C-141 is 38,500 pounds. During contingency (wartime), with Air Force Major Command (MAJCOM) approval, the maximum platform weight may be increased to 42,000 pounds.**

3. **When the extraction weight falls into the load range of two parachutes, the larger extraction parachute should be used.**

4. **The minimum total rigged weight (includes the weight of the cargo parachutes) for loads to be airdropped from all aircraft is 2,520 pounds.**